

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2016/2017

BPO2064 – PRODUCTION & OPERATIONS MANAGEMENT

(All sections / Groups)

24 FEBRUARY 2017

3.00 p.m. – 5.00 p.m.

(2 Hours)

INSTRUCTION TO STUDENTS:

1. This question paper consists of **TWO (2) SECTIONS** and 10 pages (inclusive of the cover page). The formula sheet is provided for your reference on page 10.
2. **SECTION A** contains 20 multiple-choice questions (worth 30 marks). **Answer ALL** questions. Please shade answers in the Multiple-choice Answer Sheet provided.
3. **SECTION B** contains 3 structured questions (worth 70 marks). **Answer ALL** questions. Write your answers in the Answer Booklet provided.

Section A: Multiple Choice Questions. Answer All (30 Marks)

1. What is a global network of organizations and activities that supply a firm with goods and services?
 - A) supply tree
 - B) provider network
 - C) supply chain
 - D) vendor network
 - E) vendor tree

2. Which of the following are the primary functions of all organizations?
 - A) production/operations, marketing, and human resources
 - B) marketing, human resources, and finance/accounting
 - C) sales, quality control, and production/operations
 - D) marketing, production/operations, and finance/accounting
 - E) research and development, finance/accounting, and purchasing

3. A firm can effectively use its operations function to yield competitive advantage through all of the following EXCEPT:
 - A) customization of the product.
 - B) setting equipment utilization goals below the industry average.
 - C) speed of delivery.
 - D) constant innovation of new products.
 - E) maintaining a variety of product options.

4. The fundamental purpose of an organization's mission statement is to:
 - A) create a good human relations climate in the organization.
 - B) define the organization's purpose in society.
 - C) define the operational structure of the organization.
 - D) generate good public relations for the organization.
 - E) define the functional areas required by the organization.

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5. The short-range forecast is used to determine:
 - A) planning for new products.
 - B) capital expenditures.
 - C) research and development plans.
 - D) facility location.
 - E) job assignments.

6. Which of the following is NOT a step in the forecasting process?
 - A) Determine the use of the forecast.
 - B) Eliminate any assumptions.
 - C) Determine the time horizon of the forecast.
 - D) Select the forecasting model.
 - E) Validate and implement the results.

7. The three major elements of the product decision are:
 - A) selection, definition, and design.
 - B) goods, services, and hybrids.
 - C) strategy, tactics, and operations.
 - D) cost, differentiation, and speed of response.
 - E) legislative, judicial, and executive.

8. A manager wants to build 3-sigma \bar{x} -bar control limits for a process. The target value for the mean of the process is 10 units, and the standard deviation of the process is 6. If samples of size 9 are to be taken, what will be the upper and lower control limits, respectively?
 - A) -8 and 28
 - B) 16 and 4
 - C) 12 and 8
 - D) 4 and 16
 - E) 8 and 12

Continued...

9. A successful quality strategy features which of the following elements?
- A) an organizational culture that fosters quality
 - B) an understanding of the principles of quality
 - C) engaging employees in the necessary activities to implement quality
 - D) A and C
 - E) A, B, and C
10. Three broad categories of definitions of quality are:
- A) product quality, service quality, and organizational quality.
 - B) user based, manufacturing based, and product based.
 - C) internal, external, and prevention.
 - D) low-cost, response, and differentiation.
 - E) Pareto, Shewhart, and Deming.
11. Red Top Cab Company receives multiple complaints per day about driver behavior. Over nine days, the owner recorded the number of calls to be 3, 0, 8, 9, 6, 7, 4, 9, and 8. What is the upper control limit for the 3-sigma c-chart?
- A) 13.35
 - B) 8.45
 - C) 24.00
 - D) 0.00
 - E) 9.03
12. An employee produces 15 parts during a shift in which he made \$90. What is the labor content of the product?
- A) \$90
 - B) \$5
 - C) \$6
 - D) \$0.167
 - E) \$1,350

Continued...

13. Globalization of the location decision is the result of all EXCEPT which of the following?
- A) market economics
 - B) higher quality of labor overseas
 - C) ease of capital flow between countries
 - D) high differences in labor costs
 - E) more rapid, reliable travel and shipping
14. The _____ layout's main objective is to equalize the task time for each station.
- A) work cell
 - B) fixed position
 - C) office
 - D) job shop
 - E) product oriented
15. The main issue in designing process-oriented layouts concerns the relative positioning of:
- A) safety devices.
 - B) departments or work centers.
 - C) raw materials.
 - D) entrances, loading docks, etc.
 - E) supervisors to their employees.
16. Which of the following is a primary supplier selection criterion for a firm pursuing a differentiation strategy?
- A) product development skills
 - B) cost
 - C) capacity
 - D) speed
 - E) flexibility

Continued...

17. Under which of the following do planning tasks associated with job assignments, ordering, job scheduling, and dispatching typically fall?
- A) short-range plans
 - B) intermediate-range plans
 - C) long-range plans
 - D) mission-related planning
 - E) strategic planning
18. Demand for a given item is said to be dependent if:
- A) it originates from the external customer.
 - B) there is a deep bill of material.
 - C) the finished products are mostly services (rather than goods).
 - D) there is a clearly identifiable parent.
 - E) the item has several children.
19. Which one of the following statements is **TRUE** about the kanban system?
- A) The quantities in the containers are usually large to reduce setup costs.
 - B) It is associated with a push system.
 - C) It is useful to smooth operations when numerous quality problems occur.
 - D) The supplier workstation signals the customer workstation as soon as a batch is completed.
 - E) The customer workstation signals to the supplier workstation when production is needed.
20. Concerning relationships with suppliers, which of the following combinations is critical to the success of JIT?
- A) close relationships with trust
 - B) close relationships with skepticism
 - C) distant relationships with trust
 - D) distant relationships with skepticism
 - E) none of the above

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Section B: Answer ALL. The Marks Allocation are stated for each question. [Total 70 marks]

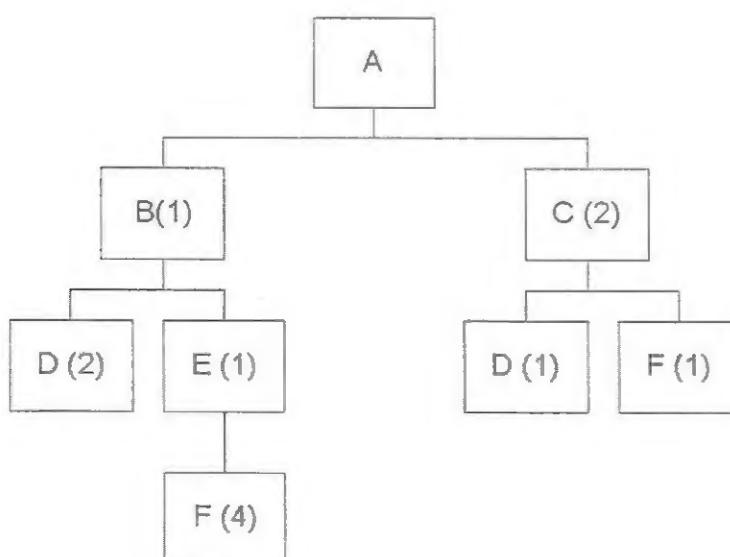
QUESTION B1 [30 Marks]

- i) Abdullah Ahmad is the production manager at a company that manufactures hot water heaters. Abdullah needs a demand forecast for the next few years to help decide whether to add new production capacity. The company's sales history (in thousands of units) is shown in the table below. Use exponential smoothing with trend adjustment to forecast demand for period 6. The initial forecast for period 1 was 11 units; the initial estimate of trend was 0. The smoothing constants are $\alpha = .3$ and $\beta = .3$

<u>Period</u>	<u>Actual</u>
1	12
2	15
3	16
4	16
5	18

[15 Marks]

- ii) Consider the following product structure. Fifty units of Product A are needed. How many units of B, C, D, E, and F are needed?



[10 Marks]

Continued...

- iii) Explain the role of labour productivity in location decisions? [5 Marks]

QUESTION B2 [20 Marks]

- i) A company looking for venture capitalist funding is deciding on the design of its operating system (OS) for its new phone. The first option is to simply buy the OS from another company. This would result in sales of either 10,000 units if the market is not crowded with similar phones, or sales of only 3,000 units if the market is crowded. If the company decides to design its own OS, the phone would have sales of 70,000 units if the OS was popular, but sales of only 2,000 if the OS was a failure. Suppose that to recoup the cost of designing their own OS the company would need to sell twice as many phones as when they simply buy the OS for the profit from the scenarios to be equal.

(a) Draw the appropriate decision tree [5 Marks]

(b) Which option should the company choose if the probability that the market is crowded is 50% and the probability that the OS is popular is 75%? [4 Marks]

- ii) A company is deciding where to assign its summer intern. The manager estimates that the intern can save the company \$10,000 in supply chain costs. Given the table below, what increase in sales (revenue) by the intern is required to show an equal profit? [5 Marks]

	Supply Chain costs	Variable Costs (materials)	Profits
% of current sales (revenue)	35	25	40

- iii) Discuss how the corporate and operations management strategies impact on the criteria used for selecting suppliers? [6 Marks]

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QUESTION B3 [20 Marks]

- i) The soft goods department of a large department store sells 175 units per month of a certain large bath towel. The unit cost of a towel to the store is RM2.50 and the cost of placing an order has been estimated to be RM12.00. The store uses an inventory carrying charge of $I = 27\%$ per year.

Determine: (a) the optimal order quantity [2.5 Marks]
(b) the order frequency [2.5 Marks]
(c) the annual holding and setup cost. [3 Marks]

- ii) What are the 5Ss? Why does the list of the 5Ss sometimes have seven elements? [6 Marks]

- iii) Differentiate between a push and a pull system. [6 Marks]

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FORMULA SHEET

$$F_t = \alpha(A_{t-1}) + (1 - \alpha)(F_{t-1} + T_{t-1})$$

$$T_t = \beta(F_t - F_{t-1}) + (1 - \beta)T_{t-1}$$

$$UCL_{\bar{x}} = \bar{x} + z\sigma_{\bar{x}}$$

$$LCL_{\bar{x}} = \bar{x} - z\sigma_{\bar{x}}$$

$$UCL_c = \bar{c} + 3\sqrt{\bar{c}}$$

$$LCL_c = \bar{c} - 3\sqrt{\bar{c}}$$

$$UCL_p = \bar{p} + z\sigma_p$$

$$LCL_p = \bar{p} - z\sigma_p$$

$$Q^* = \sqrt{\frac{2DS}{H}}$$

$$N = \frac{D}{Q^*}$$

$$TC = \frac{D}{Q} S + \frac{Q}{2} H$$

$$H = IP$$

$$\text{Labour cost per unit} = \frac{\text{Labour cost per day}}{\text{Production (units per day)}}$$

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